

THE ZOO GOER

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Back Cover: As handsome as it is rare, the white-winged woodduck made history with a first-ever birth at the National Zoo.

Mary C. Massey
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Photographs on cover and pp. 3 & 22 by Francie Schroeder; p. 5 by Fred Straub; p. 6 by Norris Klesman; p. 7 by John Rappole; p. 9 by Patricia Ann Dovi; p. 10 by GeeGee Gietgey; pp. 13, 14, & 16 by U.S. Fish & Wildlife Service; pp. 15, & 21 by Sabin Robbins; back cover and p. 20, by Ilene Berg.



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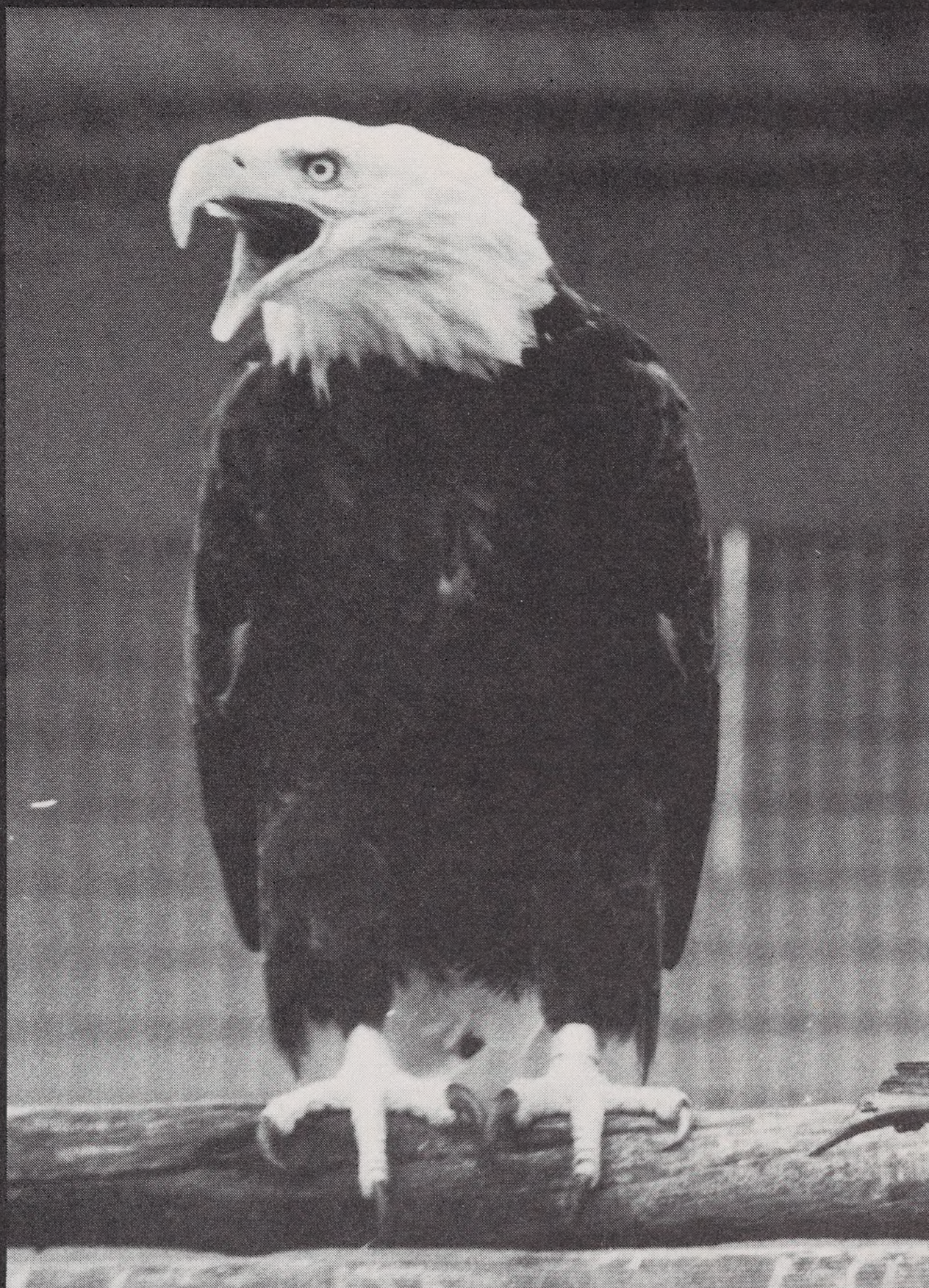
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A Different Kind of Captivity

A Different Kind of Captivity

by William G. Conway
Director, New York
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If you have never danced with a whooping crane, "chuffed" with a tiger, or helped a bog turtle out of its eggshell, you may entertain either an idealized view of wilderness characterized by noble beasts, or a dispassionate one of inexorable statistics and neat mathematical models. However, if you can admit to what Rockefeller University professor Donald Griffin calls an "evolutionary continuity of mental experience" in all living creatures, and you would be willing to take to the water after the fashion of Konrad Lorenz to help goslings learn to swim, you have a selective advantage in understanding what follows.

At the present rate of human exploitation, most of the earth's major ecosystems will be fragmented during the next twenty-five years. Much of the world's most beautiful and inspiring wildlife will be lost. This quite thinkable possibility is beginning to stimulate extraordinarily di-

Previous Page: Successful captive care and breeding of bald eagles at the U.S. Fish and Wildlife's Patuxent Center in Maryland represent an all-out effort to save our national symbol from extinction.

verse, and often bizarre, efforts to preserve vanishing animals. Such programs do not treat the ultimate cause of wildlife endangerment; they deal with the symptoms—the loss of animal species. Yet the act of preservation can be powerful incentive for man to reconsider environmental destruction. And it would be helpful to have some species extant, in case a few of the ultimate problems are solved. However, the early results of these programs reveal the need for a new view of the future of rare animals. There is hope for some species whose plight once would have been hopeless, but unfortunately, it implies a *kind of captivity* for much that is now wild.

"Nature should be allowed to take its course," say those who decry the manipulation of wildlife through management or captive propagation. Few people debate this view for areas where nearly natural and complete ecosystems remain. Where they do not, however, it is unrealistic. And such attitudes seriously hinder many investigative and supportive projects essential to the survival of an increasing number of wild creatures.

Very little of nature has any prospect of remaining undisturbed. Nearly one-third of the

Amazon tropical forest, the world's largest, has already been destroyed, and more than 23,000 square miles of forest are cut or burned, primarily for agriculture, in northern South America each year. Scientists at the 1977 Nairobi Conference on desertification calculated that, around the world, about 14 million acres are destroyed annually by unsound agricultural practices. The earth's most productive land is already being cultivated, and one-third of it will be lost, at this rate, during the next twenty-five years. Meanwhile man's need for food will double.

Sobering figures like these remind us that it is farmers and fishermen, subsistence hunters, woodcutters, and miners—not government bureaus or conservationists—who are the real managers of the earth's environments. What is left of wilderness is being contracted into smaller and smaller islands, mere remnants of the great jungles, savannas, and marshes. National parks alone, existing or contemplated, will not be able to sustain some of the most interesting of wild creatures.

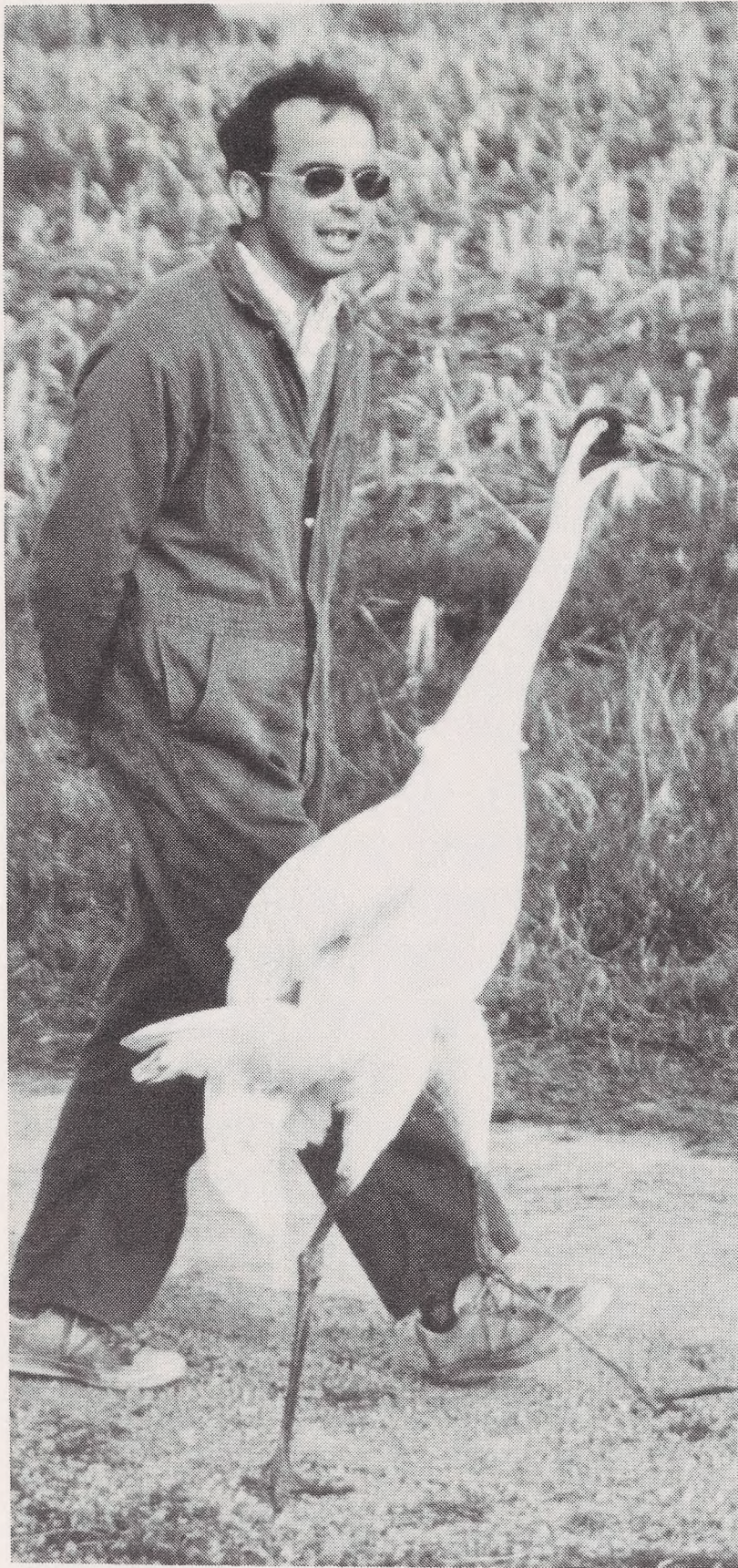
All natural habitats are subject to decay and successional change. Thus, even those preserved in parks may prove to be less than the "minimized critical



Gorilla births at the Cincinnati Zoo typify the remarkable recent successes enjoyed by zoos in breeding endangered animals.

size'' required to sustain—unaided—viable populations of various species. Some have already lost much of their diversity. Most of the refuges founded a decade or two ago were, in effect, much larger than they are now, for they were surrounded by undeveloped lands. Today, cotton fields are cultivated upon the border of even the great Serengeti. Other areas are being encircled by fences that further divide once interbreeding animal populations into small fragments vulnerable to the slightest loss. Only very large parks that contain exceptional representations of the various habitats in an ecosystem have much chance of maintaining their original biota without increasingly intensive management. It is against this background—and the spur applied by man's tardy conviction that it is much worse to lose the last animal in a population than the first—that a series of manipulative efforts have been launched to preserve animal refugees.

In Baraboo, Wisconsin, a serious, bespectacled young man goes dancing each morning with a female whooping crane. At the Darwin Station in the Galapagos, a scientist feeds hatchling gaint tortoises. At the



Bronx Zoo in New York City, zoologists stand by to aid a pregnant Mongolian wild horse in case delivery should prove difficult, and in the Bialowieza Forest in Poland, a truckdriver deposits hay for a herd of hulking European forest bison. Each of these activities bespeaks a dedication to the continued survival of a wild creature that, because of man, is no longer able

Dancing daily with a female whooping crane is part of the unusual effort that conservationists like Dr. George Archibald make to improve breeding of endangered species.

to survive without human assistance. And each is representative of a growing new concept of responsibility toward wildlife, a new relationship between man and animal.

Most endangered animals have been victimized by unnatural pressures—such as new competitors, predators, pollution and disease—and by reduced resources—such as lack of healthful foods, nesting sites, and cover. Their populations may be so small that breeding is prevented or minor environmental fluctuations could result in their extinction. Where the conservation basic, habitat preservation, cannot be adequately realized or comes too late, several manipulative approaches are being used to respond to these problems: improvement of breeding success, habitat management, modification of behavior patterns to increase survival under changed conditions, establishment of new wild populations, transplantation, re-introduction into nature, and propagation in captivity.

The serious young man dancing his morning away with a whoop-

ing crane is Dr. George Archibald of the International Crane Foundation. His purpose is to strengthen the pair-bond he has established with this abnormal crane, and so induce her to lay eggs after being fertilized with semen extracted from a captive male kept nearby—improvement of breeding success. Although neither bird is capable of breeding normally (the male because of health problems, the female because of imprinting on human beings), their genes are too important to be lost to the few survivors of their species.

Reduced in numbers to some sixty birds in nature, whooping cranes are also the subject of a pioneering effort to establish a new population on a new range. Since May 1975, whooper eggs laid by a captive flock at the Patuxent propagation center of the U.S. Fish and Wildlife Service in Maryland have been placed in the nests of sandhill cranes breeding in Idaho. It was hoped that the foster parents would not only rear the whooping crane chicks but also teach them the sandhill migratory route south. This would provide new nesting and winter-feeding areas to the whooping cranes, which have lost much of their original range to man. By spring

1977, it was clear that this is precisely what had happened. However, it is not yet known whether the young whoopers will seek mates among their own kind or, as a result of imprinting upon the foster parents, hybridize with sandhills. Preliminary signs are encouraging, however, for the youngsters seem to be seeking each other out in preference to sandhills. The whooping cranes have also learned to accept the more granivorous diet of the sandhill—crustaceans and other small aquatic animals make up less of their new food. Thus, there has been a modification of behavior patterns and, perhaps,

the establishment of a new wild population.

Techniques like these—artificial insemination; artificial incubation; egg transfers from successful captive or wild populations to unsuccessful wild populations; stimulation of double clutches; cross-fostering between related species; imprinting upon humans to stimulate ovulation and to ease artificial insemination—are being used to improve breeding success in a variety of faltering bird populations from New Zealand to Canada. Each method is dependent upon exceptionally sensitive understanding of individual animals by in-

dividual persons—inevitably, a kind of captivity.

An older supportive technique depends upon a bird's ability to alter its nesting requirements. Bluebirds, threatened in North America by the introduced starling and the English sparrow, are now largely dependent upon man-made nest boxes. In Canada, a 2,000-mile-long "bluebird trail" provided boxes for 7,000 nesting pairs of bluebirds in 1976. Artificial cliff ledges in Turkey have improved the nesting success of the endangered bald ibis, while concrete nesting ledges constructed as an experiment in a Trinidad cave have helped to treble the breeding population of the nocturnal oilbird. The Bermuda petrel's tiny surviving population is now almost completely dependent upon artificial nest burrows. Entrances are fashioned millimeters too small for that species' aggressive and abundant nest competitor, the white-tailed tropic bird. Almost all wild Puerto Rican parrots now nest in boxes made of PVC sewer pipe erected in their rain forests. Even ospreys and eagles build their bulky nests on man-made platforms in some areas where their secluded nesting trees have been felled. Again, each example is a kind of captivity.



Massive destruction of the world's wilderness, mostly for farms to feed a soaring population, has forced more and more wildlife into man-managed preserves.

The rarity of Kirtland's warbler of North America, which nests in a small area of Michigan and winters in the Bahamas, occasioned an even more elaborate manipulation of its ecology and habitat. The birds nest in thickets of jack pines, six to thirteen years old. As these trees arise after a fire, several thousand acres were set aside and subjected to controlled burns for the birds' use. However, even this was not enough.

Introduced crops made the area favorable for the advance of the brownheaded cowbird, a brood parasite. Cowbirds laid eggs in over half of all the warbler nests and their much bigger chicks pushed out any warbler nestlings that managed to hatch. The warbler population fell alarmingly. In 1972, trapping was initiated and more than 17,000 cowbirds have been removed. As a result, the warblers have made a strong comeback.

Transplanting animals from wild or protected populations to areas from which they have been extirpated has been a successful technique with big mammals. The pioneering work of Ian Player who moved white rhinoceroses from Umfolozi Park

in South Africa to several new reserves was, at the same time, one of the most important and most difficult such programs ever attempted. Another project involving the movement of populations of bontebok and white-tailed gnu resulted in the survival of these forms despite long odds. Once nearly extinct, the gnu now numbers about 3,500 and the bontebok has been built up from fewer than 200 to approximately 1,000 animals. Recently, the New Zealanders saved an unusual bird, the saddleback, from certain extinction by introduced cats. A part of the population was moved to a protected island. All of the birds not transplanted have been lost.

The supplementary feeding of faltering animal populations is yet another technique borrowed from captivity. A modification of both ecology and behavior, it is now proving necessary in a long list of disturbed ecosystems. Some populations of elk in the United States, the lions in the Gir Forest of India, and Japan's sacred cranes and white-naped cranes are all supported in this way. Dr. Stanley Temple of the University of Wisconsin-Madison has suggested that there is an important lesson in the readiness of animals to

adopt such help; a species' habitat and food selection may be the result of early experiences, but there is greater flexibility in the requirements of wild animals than might have been expected. Nevertheless, the most demanding of manipulative techniques is the total commitment of captive propagation.

Some conservationists are wary of captive propagation programs because of genetic difficulties that can be posed in inbreeding small populations. The progeny of closely related parents are often less fertile, even less viable, than those of unrelated parents. This effect is called "inbreeding depression" by geneticists. In addition, problems may be experienced in re-introducing captive-bred animals into nature—in places where that alternative still exists. However, the potential for genetic problems is not restricted to captive populations and the difficulties of re-introduction are by no means universal.

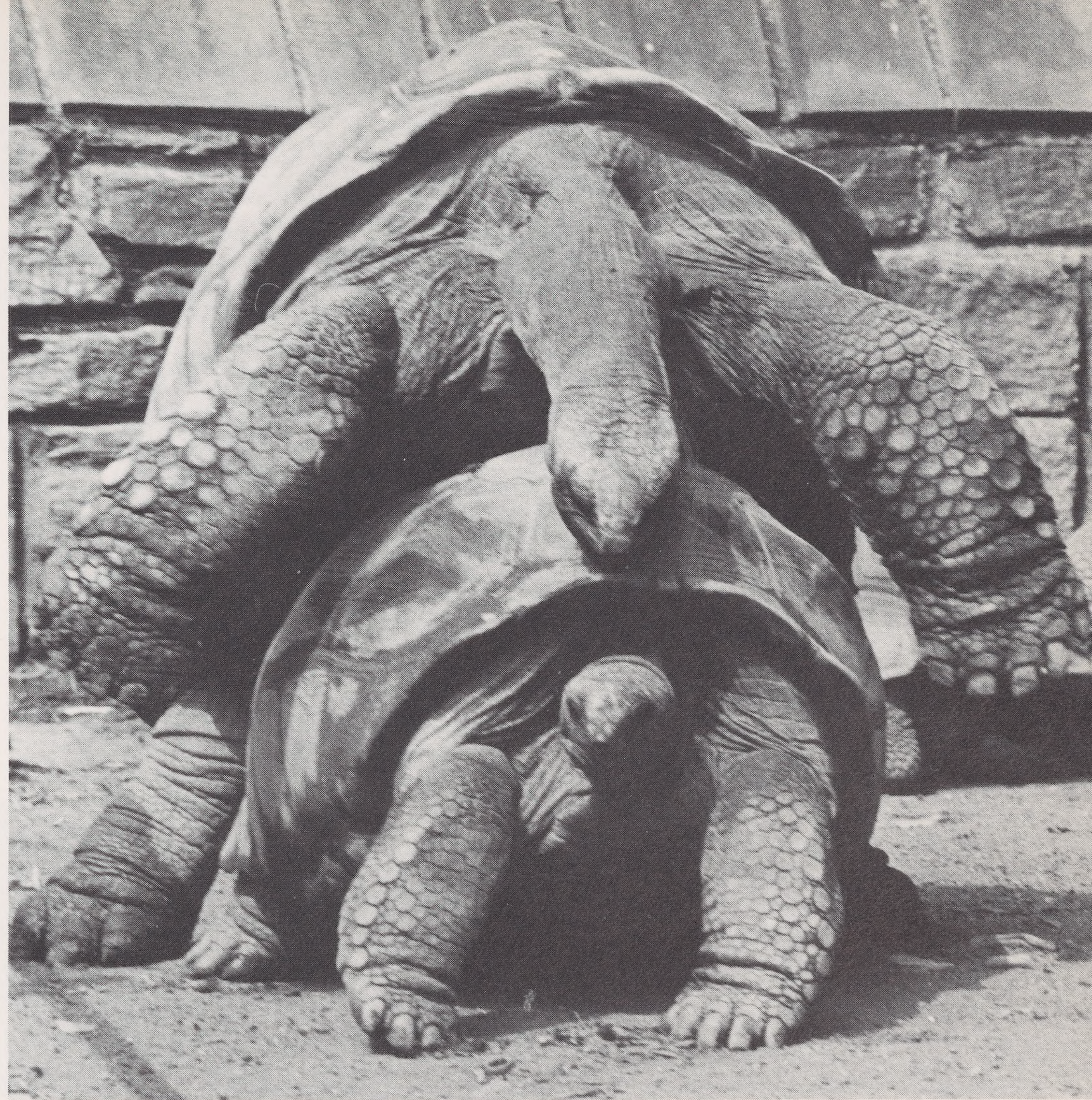
A captive gene bank has the potential to increase greatly the size of a species' functional population and habitat holdings, if representatives of the captive population are interchanged with the wild from time

One of the world's rarest reptiles, the giant Galapagos tortoise, has been saved from sure extinction by captive breeding programs in the Galapagos Islands and at zoos.

to time. It can also act as insurance in case the wild population is lost. Thus, exchange relationships between parks with necessarily small populations of certain species and zoos with propagation programs for the same animals could be useful.

Predators pose a special responsibility to captive collections. In nature, they require relatively large hunting territories, not to mention food animals, to maintain even small populations. And we have not learned how to live with great predators, such as tigers and grizzly bears, in an increasingly crowded world. Already, there are more Siberian tigers in zoos than in nature. Other species—Formosan sika deer, Pere David deer, and Mongolian wild horse—survive only in captivity. The European bison exists in preserves today as a result of zoo re-introductions after extinction in nature.

Captive breeding has also saved at least one of the world's rarest reptiles, the giant tortoise of Hood Island in the Galapagos. Feral goats had denuded its home of vegetation. In 1970, all



the tortoises that could be found—only two males and twelve females—were taken into captivity at the Darwin Station. There was no evidence of prior successful breeding in this century. However, since then,

eighty-eight young have been bred at the Station, and some have already been returned to Hood Island. Trumpeter swans, Hawaiian geese, and many other birds also have been helped by re-introductions from captive



Threatened by introduced starlings and English sparrows, bluebirds now depend on man-made nest boxes, like this one at the Zoo's Front Royal Center.

breeding programs, and captive stocks of other species are rapidly accumulating.

In the last ten years, there has been an explosion of successful captive-breeding programs in zoos. Nearly one-twelfth of all

the living species of birds and a fifth of the mammals were bred in captivity during the past two years. The total number of captive-bred gorillas recorded in the 1965 census of the *International Zoo Yearbook* was only 8, but for 1975 it was 72. Comparable figures for Siberian

tigers for the same years are 63 and 422; for Arabian oryx, 7 and 59; for cheetah, 0 and 102. Since 1975, the Pretoria Zoo's cheetah farm alone has produced 39 cheetah. However, zoos have limitations. All the zoos in the world could fit easily within Brooklyn. In this connection, the potentials of rural zoo breeding farms are great.

While inbreeding in captive collections may become a problem, populations of rare animals in nature today are often no larger than those in captivity, sometimes smaller. Moreover, animals vary in their responses to inbreeding. The most inbred population may have genes for an adaptability that gives it an advantage over a population much more richly endowed. Many inbred strains of mice have been developed for biomedical research, and all domestic hamsters are descended from only two pairs; however, intensively inbred strains of rabbits are usually not viable. The northern elephant seal's population recovered from a low of fewer than twenty animals, eighty years ago, to more than 30,000 today, during a period of great change in its coastal environment. It shows no effects of inbreeding depression, thus far, and may be one of the

"adaptable" species. Island species, and others traditionally confined to small populations, may ultimately prove more resistant to the effects of inbreeding than those of wider dispersion, which are capable of finding environments to which they are adapted rather than adapting to changes in a restricted habitat.

In any case, the potential for loss of genetic variability in wild populations is probably greater than in soundly managed captive populations of comparable size within the same period. Loss of variability can only occur, of course, in the loss of individuals and in the replacement of generations through reproduction. Because captive animals usually live longer than their wild relatives, the turnover of generations is slower, and the opportunity for selective pressures to affect the genotype is reduced. Captive parents are likely to have a greater opportunity to pass on their genes in a greater number of combinations to more young over a larger number of breedings than would occur in nature.

The re-introduction of captive-bred animals into nature can be simple and uneventful. This was the case with the America bison,

some of whose populations today are descended from animals bred in the Bronx Zoo and shipped to western refuges between 1907 and 1917. Many captive-bred ungulates have been successfully re-established in nature. However, when an animal is dependent upon complex learned behaviors—for example, the hunting behavior of great cats and birds of prey—the task can be much more difficult. Too often, those releasing captive animals into nature have done so with little understanding. Surprise and disappointment are expressed when a creature that has never eaten anything but a ration from a steel dish fails to learn to protect itself against predators, to seek shelter, or to adapt to a new diet overnight. Better understanding of the problem gives hope of new successes.

Among the most difficult of re-introductions are the present attempts to re-establish the peregrine falcon—by Dr. Tom Cade in the eastern United States where it is extinct, and by Richard Fyfe in Canada where it is greatly reduced. The bird is endangered because of the effect of chlorinated hydrocarbons upon its reproduction. With the banning of DDT and related compounds, there has been a decline of toxic residues in

the environment, but this came too late for the birds in the eastern U.S. In an extraordinary captive breeding program now seven years old, 331 peregrines have been bred at Cornell University, and the effort to re-introduce them in nature is now underway through a process known to falconers as "hacking."

On steel towers, cliff ledges, and old treetop hawk nests, chicks bred in captivity are being reared by caretakers they cannot see. Raised from artificially incubated eggs by Cade's assistants during their first weeks, they are later fostered for a time by captive falcons. Several weeks before they can fly, the peregrines are placed at the eyries, where, it is hoped, they will breed as adults. In order to avoid excessive familiarity with man, their food is delivered through a long pipe.

The rate of survival is high; the chicks do learn to hunt for themselves, as long as they can return, for a few weeks, to feed at the eyrie when food is scarce. The peregrines have wintered successfully and are being seen where there have been no falcons for decades. Last spring, P21, a captive-bred Canadian bird, mated with a wild peregrine and reared three chicks—the first captive-bred peregrine ever to breed in

nature! However, it is obvious that re-introducing captive-bred animals to nature is not simply a matter of dumping them out to shift for themselves.

To many of us, the very word "captivity" is repugnant. Yet when wild creatures are dependent for their survival on sewer-pipe nest boxes, artificial feeding, transplantation to replace natural dispersion, artificial incubation and cross-fostering, trapping of predators and competitors, not to mention long-term captive propagation, that is hardly freedom. It is time that there be an evolution in man's perception of animal captivity away from the stereotyped notions of incarceration and toward a constructive concept of ultimate responsibility and care. The alternative for some species is extinction.

Reserves and parks are our most important conservation efforts, by far. But, when we try to nail animal sanctuaries in place, we forget that many are transient and always have been. Eventually, we surround and lay siege to each of our preserves, turning them into jails, leaving some of their denizens nowhere to move as their habitats decay and succeed one another, and no way to adapt unaided. Higher animals cannot evolve so quickly. The life of the

shortest-lived taxa is eons greater than that of the longest-lived civilization; the age of a score of penguin colonies is greater than that of the oldest of human cities.

The protection of large functional ecosystems requires grand international strategies, and these are not likely to be wholly implemented in the foreseeable future. Conservationists' programs must reflect not only changing perceptions of values but also historical opportunities. Our growing understanding of animal requirements and the potentials of "captive" management is such an opportunity. Combined with the fact of a steadily shrinking wilderness, it is clear that there are few situations where "the best management is no management".

Where we cannot provide a sufficiently rich environmental panoply for natural communities to follow their wild rhythms, we must maintain or create the needed habitats—or we must modify the lives and behavior of the animals important to us so as to enable them to survive. One way or the other, it amounts to a kind of captivity.

This article is reprinted from *Animal Kingdom*, published by the New York Zoological Society in April-May, 1978.



Animal Trade

Animal Trade

by J. Fisher

Travelers often forget that the chic handbag, fashionable fur coat, or delicate ivory carving purchased abroad may cause them plenty of trouble and expense back home.

If that once-in-a-lifetime bargain has been made from one of the more than 600 animals on the worldwide list of endangered species, it's subject to confiscation, and in some cases a fine.

"But it was already dead, I didn't kill the animal," wails Joe Junketeer, reluctantly surrendering his keepsake. What he forgets is the reasoning behind the regulations. Every purchase of a product or curio made from an endangered animal exerts pressure on remaining members of that species to survive and indirectly leads to the death of many more at the hands of poachers and greedy hunters.

Ignorance is no excuse. So if there's any doubt in a traveler's mind about the purchase of an

item fashioned from a dead animal, it is advisable to read "Facts about Federal Wildlife Laws," published by the U.S. Fish and Wildlife Service. The pamphlet can be obtained free by writing the Fish and Wildlife Ser-

vice, U.S. Department of the Interior, Washington, D.C. 20240.

Knowing the law is also necessary when importing live animals. In many cases it's illegal.



Previous Page: Products made from endangered species are not only illegal to bring into the United States but sales abroad indirectly lead to the animal's extinction.

An illegal shipment of cobra skin belts is confiscated by a wildlife inspector, employed by the U.S. Department of Interior's Fish and Wildlife Service.

Some confiscated animal parts, like this Asian elephant ivory tusk, now help teach zoology to young visitors at Zoo Lab.

Despite all the publicity, the animal trade still goes on. So do the fines and confiscations. "We've come to the reluctant conclusion that many people can't read or if they do, it just doesn't sink in," says Alan M. Levitt, a public information official with the Fish and Wildlife Service.

Statistics bear him out. The Service's Division of Law Enforcement handled 523 cases in 1977. Thirty-six people were slapped with criminal convictions adding up to \$8,445 in fines and 750 days in jail. More than 400 civil penalties were assessed and \$33,535 was collected in fines. Some 740 animals and wildlife products valued at \$80,000 were confiscated.

The United States has a voracious appetite for wildlife and is a major marketplace for both legal and illegal kinds. More than 400,000 reptiles are legally imported each year, along with about 100,000,000 fish, several hundred thousand birds, and some 100,000 mammals, most of them primates used in biomedical research.



Imported manufactured goods—leather purses, shoes, jewelry, fur coats, carvings, trinkets, etc.—skyrocketed from a low 1,700,000 items in 1972 to 91,000,000 in 1976. The market for raw materials is on the upswing, too. Skin and hide imports jumped from 910,000 in 1973 to 32,500,000 in 1976. Similarly, the importation of game trophies has increased—from 2,800 in 1973 to 34,000 in 1976.

The U.S. Government recently hired a force of wildlife inspectors to help its hard-pressed special agents handle this soaring volume. Any irregularities discovered by the inspectors are referred to a special agent in the port city involved for a follow-up investigation.

Clark R. Bavin, the Fish and Wildlife Service's Chief of Law Enforcement, says today's wildlife violator "is more cunning, more calculating, and more inclined to conspire with others to make inroads into wildlife resources." These people include poachers, middlemen, brokers, and shippers out to make a fast buck.

Well-heeled hunters are another problem. Notes Bavin, "Many willingly pay large sums of money to kill an animal illegally in one part of the country, or for that



An illegal handbag and compact made from the pelt of an endangered leopard are typical of the hundreds of contraband wildlife articles confiscated annually by U.S. Government agents.

matter the world, and fly home again. Their trophies are shipped home later by devious means in the hope of escaping detection."

One ploy is to ship an illegal skin in with a batch of green hides cleared for import. "The uncured hides smell terrible, and they hope that we won't bother to go through them carefully," explains a veteran agent. "I've also found a leopard skin hidden in an elephant foot fashioned into an umbrella stand."

Since it's illegal to kill alligators in this country or to export them, one of the biggest sources for these hides has been blocked. The principal areas now are the rain forests of South and Central America. Hides are shipped to Japan, Europe, and the U.S. for

tanning and manufacturing into products.

"Illegal hides are often smuggled out of the country and taken to a second country, which issues export permits to legalize or 'launder' them," Bavin says. "It should be noted this practice of laundering illegal wildlife occurs throughout the spectrum of international wildlife trade."

"Often it is impossible to determine the source or to establish the illegality of products made from such hides as crocodilians, especially when the pieces of hide are small. Think about identifying watchbands, when a shipment contains 50,000."

Agents used techniques worthy of a TV thriller to keep one large batch of alligator hides in the country and out of the "laundry." They began following a vehicle after observing what they believed were bags of illegal skins being delivered to a suspect in a New Orleans hotel parking lot.

Agents in light aircraft and automobiles tracked this suspicious shipment all the way to Newark, New Jersey. During the surveillance, one special agent posed as a Delaware Memorial Bridge toll booth operator so he

could smell the distinct odor of freshly salted alligator hides when the driver rolled down his window to pay.

In Newark, another agent, who had been following the car for three days, posed as an unshaven derelict lying in a gutter to observe the hides being unloaded in front of an import company. Their hard, painstaking work paid off in a conviction and a stiff fine.

But tourists, not slick operators, are applying most of the pressure to the elephant. The demand for ivory and ivory products soared after word got out that some nations were moving to protect their animals. The price for raw ivory has climbed to \$25 a pound, and has had severe consequences in the wild where poaching has become commonplace.

The flood of ivory has given inspectors an almost impossible task—trying to differentiate between African and Asian tusks. The United States presently prohibits the import of all ivory and ivory products that come from the Asian elephant. Yet in some cases ivory of the African elephant can be legally imported. It's a tricky business, best resolved by checking first with the Fish and Wildlife Service.

Before the government took action, the same pressures were being applied to the few remaining sea turtles not on the endangered list. Parts of the animals were used for food, leather goods, jewelry, and curios. The oil was used in cosmetics.

To stem the tide, three more sea turtles (loggerhead, green, and olive Ridley) have been placed on the list and within a year any trade in products fashioned from them will be prohibited. Now almost all sea turtles in the world are protected.

Importing live animals poses quite a different problem. Certain birds are especially popular, and people often go to bizarre lengths to smuggle them into the country. Tiny birds have been placed in nylon stockings, then stuffed inside hair curlers to avoid detection. One man was caught with 400 finches sewn into his coat lining. Not long ago 73 parrots were found in paper bags hidden inside door panels of a car crossing the Mexican border.

As information official Alan Levitt points out, "The problem of smuggling live birds into the United States has become particularly acute in the last few years because of severe out-

breaks of Newcastle's disease in both the pet bird and poultry industries. Control and eradication of this disease has cost the taxpayers millions of dollars and has had a severe impact on the poultry industry."

Although many birds in the pet trade can legally be brought into this country by passing through U.S. Department of Agriculture quarantine facilities, they are often smuggled to avoid the added expense of the quarantine procedure. Export licenses are also sometimes difficult to come by in certain foreign countries.

Proof that an imported species, whether live, hide, or product, is illegal is usually the key to successful prosecutions. Whenever an agent comes across a doubtful item, a specialist is called in to provide positive identification. An agent recently took a leopard coat that had been seized from a tourist entering the country to the Smithsonian Institution to verify that it was in fact the product of an endangered species.

In many instances, identification comes through special training and years of on-the-job ex-

perience. "We use pictures and descriptions of wildlife as aids in identification—but it's not enough," says special agent Victor A. Blazevic. "For small pieces of fur a feel for the texture is important. It can make the difference between identifying them as felid or canid furs. Other physical characteristics can be learned only by experience."

Experienced or not, agents are always on the lookout for the five most popular categories of prohibited wildlife products sold abroad:

—Jewelry, cosmetics, and other products fashioned from various species of sea turtles.

—Rugs, skins, clothing, and hunting trophies made from spotted cats, such as jaguar, cheetah, leopard, margay, ocelot, tiger.

—Whale teeth (ivory) carved into scrimshaw curios and figurines.

—Alligators, crocodiles, and sea turtles made into luggage, shoes, purses, wallets, belts, and other hide goods.

—Bird feathers made into curios.

Rare Duck Birth is a Zoo First

by Charles Pickett
Curator of Birds

The combined efforts of the bird units at The National Zoological Park and the Conservation and Research Center of Front Royal have resulted in the hatching and rearing of one of the world's rarest waterfowl, the white-winged woodduck. As far as is known, this is the first time this species has bred on the North American continent.

This bird, which can be seen in the waterfowl exhibit in the rear of the Elephant House, is called "white-winged" because of a conspicuous white patch of feathers on the wing and shoulder. It is slightly larger than our mallard, with a black body and a white, often mottled, head and neck. It is omnivorous, feeding on plants as well as on invertebrates, such as insects. At the Zoo, it is fed a balanced diet of pellets and chopped fish.

The woodduck is native to Assam, India, and its range once

extended through Java. It lives in slow-moving streams and pools in primary rain forests and is probably near extinction in the wild because of destruction of this habitat. The known wild population, as of 1976, numbered only 15 pairs.

In 1968, the Smithsonian Institution, through the efforts of Dr. S. Dillon Ripley, joined the Wildfowl Trust of Slimbridge, England, in an effort to establish the woodduck in captivity. With funds provided by the World Wildlife Fund, a tea plantation ranger in Assam began collecting eggs from an area in which vital habitat was being eliminated by a deforestation project.

Of the young produced from these eggs, four birds were placed in the Gauhati Zoo in Assam, and five males and one female were sent to Slimbridge.

Slimbridge, which received two more males and four more females in 1970, first bred the species in 1971. By 1976, they had hatched and reared 82 young.

The National Zoo received two pairs of woodducks from Slimbridge in 1975. It takes two or three years for the young to mature enough to produce offspring, and although courtship

behavior was noted in 1977, no nesting was observed.

The woodduck is a cavity- or hole-nesting bird, so prior to the 1978 season, nest boxes were installed at different locations and heights in the exhibit. The parent birds selected a nest box with an opening three feet above the ground and produced two eggs.

The eggs were transferred to the Conservation-Research Center for incubation. A month later, our youngsters made their grand debut into the outside world. Both chicks were weak at hatching, and one did not survive. The other chick is doing extremely well at four months of age.

We hope to continue the propagation of this rare bird, establishing it permanently in zoos throughout the United States.

When mature, the Zoo's first-born white-winged woodduck will look like the one on the next page.



Behavior Films Made for Fonz Trainings

by Maggie Morton

As the breeding and research projects at the National Zoo have increased in complexity and number, the need to train FONZ volunteers in behavior-watch mechanisms has also increased. To illustrate various types of behavior in different species, a video tape is being made to use in the training sessions, which are held twice a year. Scent marking, play sequences, sexual behavior, and aggression are all aspects of animal behavior that a volunteer may be asked to record. The tape will show these behaviors and others to help FONZ volunteers recognize and record data. The difference in the rate and method of recording data will be shown by contrasting, for example, Indian rhinos and fennecs. With an animal as quick as the fennec, an individual is watched for a brief time and only very specific behaviors are recorded. Then another animal in the group is watched. On the other hand, almost everything a rhino does can be recorded, because of its slow movement.



FONZ staff educator, Maggie Morton, helps NRP's Roy LaRoche videotape elephant behavior for use in training FONZ volunteers.

Zoo-Fonz School Program Wins National Award

An innovative Zoo education program using FONZ volunteers and financial support has won national praise and honors from the American Association of Zoological Parks and Aquariums (AAZPA).

The AAZPA at its recent annual meeting in Denver presented a Significant Achievement Award to the National Zoo for its Fourth Grade Program.

Launched at the start of the 1977-78 school year, the pilot program, called "Zoo Animals: A Closer Look," brought fourth grade classes from D.C. public schools to the Zoo. The FONZ-financed and operated "Zoo Express" bus provided free transportation to and from the Zoo for all participants.

Each of the five visits concentrated on a specific group of animals—reptiles, amphibians, birds, mammals, and primates. By examining actual animal feathers, eggs, skins, and bones in a Zoo classroom, the students' curiosity was whetted. After each introductory session, the fourth graders toured the Zoo to see the "real" animals they had just discussed.

"This is really a fun way to learn," said one excited participant, "because it's a classroom without walls, and it's living!"

Teachers agreed, saying that their students had become so interested in animals that they began watching wildlife shows on

television and reading books on their own.

Because of the fantastic success of this Zoo-FONZ program, it has been expanded in the 1978-79 school year to include more classes in the D.C. area.



Students can handle actual animal feathers, eggs, and bones in a new, award-winning Zoo education program using FONZ volunteers and funds.

FONZ Calendar of Events*

NOVEMBER

- 4** Saturday
Wild Giants Family Day
A full day of activities specially designed for a parent and child to learn about the animals who live in the Elephant House.
- 11** Saturday
Wild Giants Family Day
Same as above.
- 20** Monday
Audubon Lecture—Death of a Legend by Scott Berry, John Harris, and Slick.
By introducing a live wolf to the audience, the lecturers will build a greater understanding of this animal.

DECEMBER

- 10** Sunday
Christmas Tree Decorating Party
An old-fashioned Christmas party where you can trim-a-tree, meet Santa, listen to carolers and musicians, and see a wildlife film.
- 18** Monday
Audubon Lecture—The Legacy of the Dodo: The Endangered Wildlife of Mauritius by Stanley A. Temple.
The relationship between the extinction of the dodo and the decline of a tropical hardwood

tree is discussed in this slide-lecture on the marvels of plant-animal interactions.

JANUARY

- 8** Monday
FONZ Photo Contest begins.
- 13** Saturday
Free tour of the Zoo conducted by trained FONZ guides.
- 15** Monday
Audubon Lecture—Where Eagles Soar by George Blau.
Using photographs taken at one-week intervals, Dr. Blau will dramatize the growth and development of the magnificent golden eagle.
- 20** Saturday
Winter classes begin.
- 21** Sunday
Winter Tracking Safari
Tracking animals through the snow of the Shenandoah National Park provides an adventure-filled day for the entire family.

* For more details please call the Membership Office at 232-7700.

